LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA5 | Northolt Corridor

Construction assessment (SV-003-005)

Sound, noise and vibration

November 2013

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Department for Transport

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1 Introduction

1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these is an introduction to the relevant policy and methodology (Volume 5: Appendix SV-001-000). This relates to the sound, noise and vibration assessment for all community forum areas (CFA).

1.1.2 For the Northolt Corridor community forum area (CFA05), the other three sections are as follows:

- baseline sound, noise and vibration (Volume 5: Appendix SV-002-005);
- construction sound, noise and vibration (Volume 5: Appendix SV-003-005) (this appendix); and
- operational sound, noise and vibration (Volume 5: Appendix SV-004-005).

1.1.3 The outcomes of the assessment are summarised in Volume 2: CFA Report 05, Northolt Corridor (CFA Report 05), Section 11.

1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5, Sound, Noise and Vibration Map Book.

1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the construction of the Proposed Scheme for the Northolt Corridor area on:

- people, primarily where they live ('residential receptors') in terms of:
  - individual dwellings;
  - on a wider community basis, including any shared community open areas; and
- community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.

1.1.6 The assessment of likely impacts, effects and significant effects from construction noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:

- Agriculture, forestry and soils — Appendix AG-001-005
- Community — Appendix CM-001-005
- Ecology — Appendix EC-005-005
- Heritage — Appendix CH-003-005
- Landscape and Visual — Appendix LV-001-005

1.2 Evaluation of impacts and effects

1.2.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.

1.2.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the Proposed Scheme are also reported in this appendix, where they will occur within the study area (as defined in Volume 5: Appendix SV-001-000).

1.2.3 In undertaking the assessment of sound and vibration, consistent with Environmental Impact Assessment (EIA) Regulations and emerging National Planning Practice Guidance[1] a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.

1.2.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The assessment locations employed in this assessment are presented in the maps SV-03-005 to SV-03-007 (Volume 5, Sound, Noise and Vibration Map Book).

[1] Information is provided in the Department for Communities and Local Government's emerging National Planning Practice Guidance – Noise http://planningguidance.planningportal.gov.uk, (refer to the noise exposure hierarchy), as available on 14th October 2013.

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Volume 5:Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group - Acoustics, information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- The Brent Unitary Development Plan - 2004; and
- The Ealing Unitary Development Plan - 2002 to 2017.

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Acoustics Sub Group, is set out in Volume 1.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration;
- September / October 2012: a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012: specific request for the Community Forum regarding baseline sound monitoring locations;
- January / February 2013: feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written responses to questions and sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1). Further clarification regarding specific areas is presented in the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of construction sound noise and vibration within this CFA are set out in Volume 2: CFA Report 05.

Local assumptions

2.4.2 Tunnel boring machines (TBM) will be used to excavate the tunnels. Materials (including tunnel lining segments), people and equipment will be transported from the surface to each TBM using small construction trains, which will travel at relatively low speeds. Excavated material from each TBM will be transported to the surface by conveyor. It has been assumed that significant noise and vibration effects arising from use of the temporary railway will be avoided through appropriate design and maintenance specification. Other methods of material movement may be employed; however, these would result in lower ground-borne noise and vibration.

2.5 Limitations

2.5.1 The route-wide limitations and the approach adopted to assure that they will not impact the robust assessment of sound, noise and vibration are presented in Volume 5: Appendix SV-001-000. No specific additional limitations are identified for this study area.

3 Environmental baseline

3.1 Existing baseline

3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are given in Volume 5: Appendix SV-002-005. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-005.

3.2 Future baseline

3.2.1 The assessment of noise from construction activities assumes a baseline year of 2017 which represents the period immediately prior to the start of the construction period. As a reasonable worst case, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2012/13) and the future baseline year of 2017. The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and Transport assessment (Volume 5: Appendix TR-001-000).

4 Effects arising during construction

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is as follows:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
  - Ground-borne sound and vibration
    - residential
    - non-residential
  - Airborne sound
    - residential
    - non-residential
- Assessment of impacts and effects
  - residential receptors: direct effects – dwellings
  - residential receptors: direct effects – communities
  - residential receptors: indirect effects
  - non-residential receptors: direct effects
  - non-residential receptors: indirect effects
  - cumulative effects from the proposed scheme and other committed development

4.2 Avoidance and mitigation measures

4.2.1 These measures are set out in Volume 2: CFA Report 05.

4.3 Quantitative identification of impacts and effects

Ground-borne sound and vibration

4.3.1 No significant sources of ground-borne vibration associated with the construction activities within this area have been identified.

Airborne sound: direct impacts and effects

4.3.2 Activities associated with the construction phases of the Proposed Scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:

- residential receptors, both as individual dwellings and communities; and
- non-residential receptors, including quiet areas.

4.3.3 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly $L_{pAeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area.

4.3.4 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 1 and Table 2 respectively.

4.3.5 The construction activity resulting in highest forecast noise levels is reported in Table 1 and Table 2 for each assessment location and time period, where the highest forecast noise level from any individual construction activity is above $L_{pAeq,T}$ 40dB during the daytime and evening periods and $L_{pAeq,T}$ 35dB during the night-time. Where the highest forecast noise level from any individual construction activity is less than $L_{pAeq,T}$ 40dB during the daytime and evening or $L_{pAeq,T}$ 35dB during the night-time no activities have been reported.

4.3.6 Explanation of the information within Table 1 and Table 2 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

	Where the significant effect column is highlighted in pink, then a significant effect is identified at the referenced community, or individual non-residential receptor
*	Significant effect – the quantitative impact methodology has identified either: 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not gives rise to a significant effect.
~	Significant effect - impacted dwellings which are either spatially remote from larger defined residential areas, or a small number of dwellings whose impact is not considered to represent the larger defined residential area, and as such are not considered to be part of a community significant effect.
A	Type of effect – annoyance
D	Type of effect – disturbance
Sd	Type of effect – sleep disturbance
Q	Type of effect – deterioration of acoustic quality

R	Type of receptor - residential
G	Type of receptor: (G1) theatres, large auditoria and concert halls; (G2) sound recording and broadcast studios; (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls; (G4) schools, colleges, hospitals, hotels and libraries; or (G5) offices and general commercial premises.
T	Receptor design – typical
S	Receptor design - special
H	Existing environment – high existing ambient noise levels: daytime level more than 75dB, evening-time level more than 65dB or night-time level more than 55dB L_{pAeq} at the façade.
NI	Mitigation effect - identified as likely to qualify for noise insulation under the draft Construction Code of Practice (draft CoCP).
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N).

Table 1: Assessment of construction noise at residential receptors

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
434826	Badminton Close, Northolt	61/65 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	15	R	T	H	-	-	-	-	
436084	Eastcote Lane, Northolt	<40/<40 [A]	-	-		NA	1	R	T	H	-	-	-	-	
436788	Eastcote Lane, Northolt	48/50 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	18	R	T	-	-	-	-	-	
436843	Moat Farm Road, Northolt	41/43 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	23	R	T	-	-	-	-	-	
436911	Moat Farm Road, Northolt	47/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	11	R	T	-	-	-	-	-	
436955	The Farmlands, Northolt	53/56 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	36	R	T	-	-	-	-	-	
436990	Eastcote Lane, Northolt	50/53 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	10	R	T	-	-	-	-	-	
437006	Eastcote Lane, Northolt	44/47 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	3	R	T	H	-	-	-	-	
437295	Eastcote Lane North, Northolt	42/44 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	41	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
439011	Moat Farm Road, Northolt	45/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	22	R	T	-	-	-	-	-	
439060	Moat Farm Road, Northolt	45/47 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	19	R	T	-	-	-	-	-	
439125	Eastcote Lane, Northolt	47/49 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	39	R	T	-	-	-	-	-	
443814	Gonville Crescent, Northolt	<40/42 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	294	R	T	-	-	-	-	-	
444511	Carr Road, Northolt	54/57 [B]	-	-	Day: Mandeville Road compound - shaft construction.	NA	43	R	T	H	-	-	-	-	
444786	Ribblesdale Avenue, Northolt	<40/45 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	88	R	T	H	-	-	-	-	
444818	Ribblesdale Avenue, Northolt	46/49 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	54	R	T	H	-	-	-	-	
445054	Mandeville Road, Northolt	44/46 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	59	R	T	H	-	-	-	-	
445544	Haydock Avenue,	44/46	-	-	Day: Mandeville Road compound - shaft	NA	125	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Northolt	[A]			construction.										
445810	Southwell Avenue, Northolt Mandeville	45/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	120	R	T	H	-	-	-	-	
445957	Thirsk Close, Northolt	46/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	58	R	T	H	-	-	-	-	
446020	Lewes Close, Northolt	46/49 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	87	R	T	H	-	-	-	-	
446045	Lewes Close, Northolt	53/57 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	36	R	T	H	-	-	-	-	
446195	Brighton Drive, Northolt	47/49 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	16	R	T	H	-	-	-	-	
446256	Tenby Gardens, Northolt	48/50 [C]	-	-	Day: Mandeville Road compound - shaft construction.	NA	25	R	T	H	-	-	-	-	
446336	Sussex Crescent, Northolt	47/49 [C]	-	-	Day: Mandeville Road compound - shaft construction.	NA	48	R	T	H	-	-	-	-	
446467	Sussex Crescent,	46/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	108	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Northolt														
446575	Goodwood Drive, Northolt	44/47 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	24	R	T	H	-	-	-	-	
446636	Mandeville Road, Northolt	51/54 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	40	R	T	H	-	-	-	-	
446718	Carr Road, Northolt	68/71 [A]	-	-	Day: Mandeville Road compound - shaft construction.	A	12	R	T	-	-	-	D 17	-	CSV05-C01
446802	Badminton Close, Northolt	70/72 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	A	15	R	T	H	-	-	D 20	-	CSV05-C01
446905	The Farmlands, Northolt	57/59 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	48	R	T	-	-	-	-	-	
447489	Carr Road, Northolt	63/65 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	39	R	T	-	-	-	-	-	
447779	Castle Road, Northolt	<40/44 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	99	R	T	-	-	-	-	-	
447965	Castle Road, Northolt	<40/45 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	75	R	T	H	-	-	-	-	
448150	Oriel Way, Northolt	42/47 [B]	-	-	Day: Mandeville Road compound - shaft construction.	NA	65	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
448156	Summit Road, Northolt	53/57 [A]	-	-	Day: Mandeville Road compound - site set-up.	NA	17	R	T	-	-	-	-	-	
448166	Cherry Gardens, Northolt	43/48 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	16	R	T	-	-	-	-	-	
448225	Belvue Road, Northolt	55/57 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	1	R	T	H	-	-	-	-	
448236	Carr Road, Greenford Green	<40/40 [A]	-	-		NA	14	R	T	-	-	-	-	-	
448262	The Farmlands, Northolt	51/53 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	27	R	T	H	-	-	-	-	
448364	The Farmlands, Northolt	60/63 [B]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	18	R	T	H	-	-	-	-	
448387	The Farmlands, Northolt	43/46 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	18	R	T	H	-	-	-	-	
448471	Moat Farm Road, Northolt	46/48 [B]	-	-	Day: Mandeville Road compound - shaft construction.	NA	5	R	T	H	-	-	-	-	
448512	Eastcote Lane, Northolt	48/50 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	62	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
448571	Eastcote Lane, Northolt	42/44 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	46	R	T	H	-	-	-	-	
448898	Fort Road, Northolt	44/46 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	65	R	T	H	-	-	-	-	
449201	Belvue Road, Northolt	58/60 [B]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	58	R	T	H	-	-	-	-	
449307	Belvue Close, Northolt	65/67 [B]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	8	R	T	H	-	-	-	-	
449326	Belvue Close, Northolt	61/64 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	NA	17	R	T	H	-	-	-	-	
449395	Belvue Road, Northolt	68/71 [A]	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	A	39	R	T	-	-	-	D 17	-	CSV05-C02
449510	Sandringham Road, Northolt	49/51 [B]	-	-	Day: Mandeville Road compound - shaft construction.	NA	81	R	T	H	-	-	-	-	
449663	Ealing Road, Northolt	51/53 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	48	R	T	H	-	-	-	-	
450037	Uneeda Drive, Greenford	41/46 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	52	R	T	-	-	-	-	-	
450387	Greenford Road,	<40/40	-	-	Day: Mandeville Road compound - shaft	NA	15	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Greenford	[A]			construction.										
450440	Ingram Way, Greenford	40/44 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	22	R	T	-	-	-	-	-	
450581	Uneeda Drive, Greenford	41/46 [B]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	20	R	T	H	-	-	-	-	
450630	Greenford Road, Greenford	<40/41 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	15	R	T	-	-	-	-	-	
450737	Greenford Road, Greenford	<40/46 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	16	R	T	-	-	-	-	-	
450829	Greenford Road, Greenford	<40/44 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	27	R	T	-	-	-	-	-	
450881	Greenford Road, Greenford	<40/40 [A]	-	-		NA	23	R	T	-	-	-	-	-	
450918	Greenford Road, Greenford	<40/44 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	15	R	T	-	-	-	-	-	
458360	Carr Road, Northolt	<40/44 [B]	-	-	Day: Mandeville Road compound - shaft construction.	NA	40	R	T	H	-	-	-	-	
465196	Priory Gardens, London	<40/44 [B]	-	-	Day: Westgate shaft compound - shaft construction.	NA	25	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
465447	Marsh Road, Wembley	45/50 [B]	-	-	Day: Westgate shaft compound - shaft construction.	NA	1	R	T	H	-	-	-	-	
466197	Conway Crescent, Perivale	46/50 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	1	R	T	-	-	-	-	-	
466333	Priory Gardens, London	40/49 [B]	-	-	Day: Westgate shaft compound - site set-up.	NA	38	R	T	H	-	-	-	-	
468141	Conway Crescent, Perivale	53/60 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	20	R	T	-	-	-	-	-	
468197	Conway Crescent, Perivale	51/56 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	35	R	T	-	-	-	-	-	
468256	Conway Crescent, Perivale	48/52 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	28	R	T	-	-	-	-	-	
468372	Bennetts Avenue, Greenford	45/51 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	32	R	T	-	-	-	-	-	
468461	Bennetts Avenue,	43/50 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	27	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Greenford														
468555	Bennetts Avenue, Greenford	44/49 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	13	R	T	H	-	-	-	-	
468612	Middleton Avenue, Greenford	42/47 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	22	R	T	-	-	-	-	-	
468689	Bennetts Avenue, Greenford	45/51 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	20	R	T	H	-	-	-	-	
468821	Downing Drive, Greenford	43/48 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	30	R	T	-	-	-	-	-	
468920	Downing Drive, Greenford	44/49 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	30	R	T	-	-	-	-	-	
470441	Medway Drive, Perivale	<40/42 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	97	R	T	H	-	-	-	-	
470517	Medway Drive, Perivale	43/47 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	17	R	T	H	-	-	-	-	
470982	Woodhouse Avenue,	43/49 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	57	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Perivale														
471067	Woodhouse Close, Perivale	47/52 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	36	R	T	-	-	-	-	-	
471199	Conway Crescent, Perivale	47/52 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	24	R	T	H	-	-	-	-	
471341	Tees Avenue, Perivale	44/50 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	47	R	T	H	-	-	-	-	
471507	Medway Drive, Perivale	43/48 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	137	R	T	H	-	-	-	-	
473135	Conway Crescent, Perivale	45/50 [A]	-	-	Day: Greenpark Way compound - shaft construction.	NA	106	R	T	H	-	-	-	-	
473420	Conway Crescent, Perivale	48/52 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	36	R	T	-	-	-	-	-	
473492	Conway Crescent, Perivale	40/45 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	24	R	T	-	-	-	-	-	
473529	Conway Crescent,	49/54	-	-	Day: Greenpark Way compound - shaft	NA	24	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Perivale	[A]			construction.										
473584	Middleton Avenue, Greenford	40/46 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	47	R	T	-	-	-	-	-	
481104	Brunswick Road, London	<40/42 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	19	R	T	H	-	-	-	-	
481180	Brunswick Road, Hanger Hill	46/50 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	20	R	T	H	-	-	-	-	
481355	Brunswick Road, London	<40/44 [>C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	20	R	T	H	-	-	-	-	
481448	Greystoke Park Terrace, London	49/53 [>C]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	12	R	T	H	-	-	-	-	
481685	Alperton Lane, Wembley	<40/45 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	1	R	T	H	-	-	-	-	
482519	Brunswick Road, London	40/44 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	30	R	T	H	-	-	-	-	
483045	Kingfield Road, London	41/45 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	46	R	T	H	-	-	-	-	
483269	Mulgrave Road,	42/46	-	-	Day: Westgate shaft compound - shaft	NA	52	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	London	[A]			construction.										
484182	Brunswick Road, London	40/44 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	29	R	T	H	-	-	-	-	
484199	Fowlers Walk, London	<40/44 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	71	R	T	H	-	-	-	-	
488860	Burns Road, Wembley	<40/40 [A]	-	-		NA	28	R	T	H	-	-	-	-	
491973	Hanger Lane (North Circular Road), Hanger Hill	47/53 [>C]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	9	R	T	H	-	-	-	-	
491989	Ritz Parade, London	48/54 [>C]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	8	R	T	H	-	-	-	-	
492009	Royal Parade, London	42/46 [>C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	10	R	T	H	-	-	-	-	
492044	Abbey Parade, London	<40/<40 [>C]	-	-		NA	26	R	T	H	-	-	-	-	
492062	Rossall Crescent, London	<40/45 [C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	4	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
492074	Twyford Abbey Road, London	<40/<40 [C]	-	-		NA	19	R	T	H	-	-	-	-	
492095	Twyford Abbey Road, London	<40/46 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	10	R	T	H	-	-	-	-	
492296	Norbreck Gardens, London	<40/42 [B]	-	-	Day: Westgate shaft compound - shaft construction.	NA	8	R	T	H	-	-	-	-	
492325	St. Annes Gardens, London	<40/<40 [A]	-	-		NA	20	R	T	H	-	-	-	-	
493240	Brunswick Road, London	49/54 [A]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	17	R	T	H	-	-	-	-	
493270	Brunswick Road, London	46/51 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	12	R	T	H	-	-	-	-	
493318	Brunswick Road, London	44/49 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	42	R	T	H	-	-	-	-	
493368	Brunswick Road, London	52/56 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	40	R	T	H	-	-	-	-	
493385	Lynwood Road, London	53/57 [>C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	15	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
493412	Greystoke Park Terrace, London	57/63 [>C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	14	R	T	H	-	-	-	-	
493528	Royal Parade, London	55/60 [>C]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	16	R	T	H	-	-	-	-	
493913	Cleveley Crescent, London	<40/43 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	22	R	T	H	-	-	-	-	
494076	Cleveley Crescent, London	51/58 [A]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	16	R	T	H	-	-	-	-	
494352	Western Avenue, London	57/61 [>C]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	78	R	T	H	-	-	-	-	
494538	Brunswick Road, London	<40/44 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	80	R	T	H	-	-	-	-	
495189	Ashbourne Parade, London	<40/45 [>C]	-	-	Day: Westgate shaft compound - shaft construction.	NA	21	R	T	H	-	-	-	-	
495554	Hanger Lane, London	40/45 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	39	R	T	H	-	-	-	-	
496122	Garrick Close, London	<40/42 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	128	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
496283	Sandall Road, London	44/48 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	15	R	T	H	-	-	-	-	
496325	Brunswick Road, London	48/52 [A]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	19	R	T	H	-	-	-	-	
496439	Brunswick Road, London	44/49 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	32	R	T	H	-	-	-	-	
496627	Lynwood Road, London	48/52 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	96	R	T	H	-	-	-	-	
497033	Lynwood Road, London	43/47 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	19	R	T	H	-	-	-	-	
497137	Sandall Road, London	44/49 [A]	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	NA	25	R	T	H	-	-	-	-	
498902	Priory Gardens, London	41/47 [B]	-	-	Day: Westgate shaft compound - shaft construction.	NA	24	R	T	H	-	-	-	-	
498973	St. Augustines Avenue, London	<40/41 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	116	R	T	H	-	-	-	-	
499178	Riverside Gardens, Wembley	<40/45 [A]	-	-	Day: Westgate shaft compound - shaft construction.	NA	32	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
510064	Horn Lane, London	<40/49 [A]	<40/<40 [B]	<35/36 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	20	R	T	H	-	-	-	-	
510683	Western Avenue, London	50/61 [A]	41/46 [B]	41/46 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	26	R	T	H	-	-	-	-	
511144	Court Way, London	44/55 [A]	<40/42 [B]	37/42 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound), Night: Northolt (east) tunnels construction; and (Victoria Road crossover box main compound).	NA	55	R	T	H	-	-	-	-	
511198	Court Way, London	44/56 [A]	<40/43 [B]	38/43 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	19	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
511226	Court Way, London	47/59 [A]	40/45 [B]	40/45 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	16	R	T	H	-	-	-	-	
511625	Park View, London	41/52 [A]	<40/40 [B]	35/40 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	51	R	T	H	-	-	-	-	
511662	Park View, London	42/53 [A]	<40/41 [B]	36/41 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	21	R	T	H	-	-	-	-	
511682	Park View, London	42/54 [A]	<40/41 [B]	36/41 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction	NA	26	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					(Victoria Road crossover box main compound).										
511852	Balfour Road, London	41/52 [A]	<40/<40 [B]	<35/39 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	15	R	T	H	-	-	-	-	
511995	Cecil Road, London	42/54 [A]	<40/40 [B]	<35/40 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	8	R	T	H	-	-	-	-	
512201	Western Avenue, London	47/59 [A]	41/46 [B]	41/46 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	27	R	T	H	-	-	-	-	
512222	Allan Way, London	45/56 [A]	<40/44 [B]	39/44 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	8	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
512377	Allan Way, London	<40/49 [A]	<40/<40 [B]	<35/38 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	18	R	T	H	-	-	-	-	
512442	Allan Way, London	43/54 [A]	<40/42 [B]	37/42 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	49	R	T	H	-	-	-	-	
512613	Allan Way, London	46/58 [>C]	40/45 [>C]	40/45 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	8	R	T	H	-	-	-	-	
512748	Wilfrid Gardens, London	44/56 [B]	<40/43 [C]	37/43 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction	NA	27	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					(Victoria Road crossover box main compound).										
512794	Western Avenue, London	45/57 [>C]	<40/44 [>C]	38/44 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	9	R	T	H	-	-	-	-	
512925	Canada Crescent, London	40/51 [B]	<40/40 [C]	<35/40 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	48	R	T	H	-	-	-	-	
513012	Canada Road, London	<40/49 [A]	<40/<40 [B]	<35/38 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; and Night: Northolt (east) tunnels construction (Victoria Road crossover box main copound).	NA	37	R	T	H	-	-	-	-	
513251	Highfield Road, London	<40/42 [A]	-	-	Day: Victoria Road crossover box compound - demolition and site preparation.	NA	58	R	T	-	-	-	-	-	
513288	Highfield Road, London	<40/41 [A]	-	-	Day: Victoria Road crossover box compound - demolition and site preparation.	NA	12	R	T	-	-	-	-	-	
517439	Western Avenue, London	43/54 [A]	<40/42 [B]	35/42 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction	NA	24	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					(Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).										
517504	Canada Crescent, London	<40/43 [>C]	<40/<40 [>C]	<35/<35 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation.	NA	28	R	T	H	-	-	-	-	
517553	Lucy Crescent, London	44/55 [>C]	<40/43 [>C]	37/43 [>C]	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	NA	17	R	T	H	-	-	-	-	
549409	Carr Road, Northolt	47/52 [A]	-	-	Day: Mandeville Road compound - shaft construction.	NA	64	R	T	-	-	-	-	-	
700471	Summit Road, Northolt	47/50 [A]	-	-	Day: Mandeville Road compound - site set-up.	NA	1	R	T	-	-	-	-	-	
700472	Woodhouse Close, Perivale	46/51 [A]	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	NA	1	R	T	-	-	-	-	-	

Table 2: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
434454	Belvue Road, Northolt	45/50	-	-	Day: Mandeville Road compound - shaft construction.	B	12	G5	T	H	-	-	-	-	
434826	Badminton Close, Northolt	61/65	-	-	Day: Mandeville Road compound - shaft construction.	B	1	G4	T	H	-	-	D 15	-	*
434826	Badminton Close, Northolt	61/65	-	-	Day: Mandeville Road compound - shaft construction.	B	1	G5	T	H	-	-	-	-	
435453	Eastcote Lane North, Northolt	63/65	-	-	Day: Mandeville Road compound - shaft internal works - head house construction.	B	1	G5	T	H	-	-	-	-	
436788	Eastcote Lane, Northolt	48/50	-	-	Day: Mandeville Road compound - shaft construction.	B	1	G5	T	-	-	-	-	-	
437006	Eastcote Lane, Northolt	44/47	-	-	Day: Mandeville Road compound - shaft construction.	B	1	G3	T	H	-	-	-	-	
445054	Mandeville Road, Northolt	44/46	-	-	Day: Mandeville Road compound - shaft construction.	B	2	G4	T	H	-	-	-	-	
445544	Haydock Avenue, Northolt	44/46	-	-	Day: Mandeville Road compound - shaft construction.	B	5	G5	T	H	-	-	-	-	
446020	Lewes Close, Northolt	46/49	-	-	Day: Mandeville Road compound - shaft construction.	B	2	G3	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
448225	Belvue Road, Northolt	55/57	-	-	Day: Mandeville Road compound - shaft construction.	B	36	G5	T	H	-	-	-	-	
448236	Carr Road, Greenford Green	<40/40	-	-		B	1	G3	T	-	-	-	-	-	
448471	Moat Farm Road, Northolt	46/48	-	-	Day: Mandeville Road compound - shaft construction.	B	3	G5	T	H	-	-	-	-	
448512	Eastcote Lane, Northolt	48/50	-	-	Day: Mandeville Road compound - shaft construction.	B	10	G5	T	H	-	-	-	-	
448571	Eastcote Lane, Northolt	42/44	-	-	Day: Mandeville Road compound - shaft construction.	B	4	G3	T	H	-	-	-	-	
448571	Eastcote Lane, Northolt	42/44	-	-	Day: Mandeville Road compound - shaft construction.	B	2	G4	T	H	-	-	-	-	
448571	Eastcote Lane, Northolt	42/44	-	-	Day: Mandeville Road compound - shaft construction.	B	4	G5	T	H	-	-	-	-	
449663	Ealing Road, Northolt	51/53	-	-	Day: Mandeville Road compound - shaft construction.	B	12	G5	T	H	-	-	-	-	
450037	Uneeda Drive, Greenford	41/46	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	B	9	G5	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
450881	Greenford Road, Greenford	<40/40	-	-		B	1	G3	T	-	-	-	-	-	
457997	Oldfield Lane North, Greenford	<40/45	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	B	1	G4	T	H	-	-	-	-	
457997	Oldfield Lane North, Greenford	<40/45	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	B	2	G5	T	H	-	-	-	-	
465196	Priory Gardens, London	<40/44	-	-	Day: Westgate shaft compound - shaft construction.	B	6	G5	T	H	-	-	-	-	
465447	Marsh Road, Wembley	45/50	-	-	Day: Westgate shaft compound - shaft construction.	B	6	G5	T	H	-	-	-	-	
466197	Conway Crescent, Perivale	46/50	-	-	Day: Greenpark Way compound - shaft construction.	B	1	G4	T	-	-	-	-	-	
466333	Priory Gardens, London	40/49	-	-	Day: Westgate shaft compound - site set-up.	B	3	G5	T	H	-	-	-	-	
469145	Lyon Way, Greenford	59/64	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	B	9	G5	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
469314	Rockware Avenue, Greenford	64/70	-	-	Day: Greenpark Way compound - shaft internal works - head house construction.	B	16	G5	T	-	-	-	-	-	
471507	Medway Drive, Perivale	43/48	-	-	Day: Greenpark Way compound - shaft construction.	B	1	G3	T	H	-	-	-	-	
471507	Medway Drive, Perivale	43/48	-	-	Day: Greenpark Way compound - shaft construction.	B	1	G4	T	H	-	-	-	-	
481355	Brunswick Road, London	<40/44	-	-	Day: Westgate shaft compound - shaft construction.	B	1	G4	T	H	-	-	-	-	
481685	Alperton Lane, Wembley	<40/45	-	-	Day: Westgate shaft compound - shaft construction.	B	6	G5	T	H	-	-	-	-	
483045	Kingfield Road, London	41/45	-	-	Day: Westgate shaft compound - shaft construction.	B	1	G5	T	H	-	-	-	-	
483269	Mulgrave Road, London	42/46	-	-	Day: Westgate shaft compound - shaft construction.	B	2	G5	T	H	-	-	-	-	
488860	Burns Road, Wembley	<40/40	-	-		B	3	G5	T	H	-	-	-	-	
491989	Ritz Parade, London	48/54	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	7	G5	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
492009	Royal Parade, London	42/46	-	-	Day: Westgate shaft compound - shaft construction.	B	7	G5	T	H	-	-	-	-	
492044	Abbey Parade, London	<40/<40	-	-		B	7	G5	T	H	-	-	-	-	
493240	Brunswick Road, London	49/54	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	1	G4	T	H	-	-	-	-	
493385	Lynwood Road, London	53/57	-	-	Day: Westgate shaft compound - shaft construction.	B	1	G4	T	H	-	-	-	-	
493486	Western Avenue, London	53/56	-	-	Day: Westgate shaft compound - shaft construction.	B	1	G4	T	H	-	-	-	-	
493528	Royal Parade, London	55/60	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	7	G5	T	H	-	-	-	-	
494208	West Gate, London	48/52	-	-	Day: Westgate shaft compound - shaft construction.	B	1	G2	T	H	-	-	-	-	
494208	West Gate, London	48/52	-	-	Day: Westgate shaft compound - shaft construction.	B	28	G5	T	H	-	-	-	-	
493528	Royal Parade, London	55/60	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	7	G5	T	H	-	-	-	-	
494208	West Gate,	48/52	-	-	Day: Westgate shaft compound - shaft	B	1	G2	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	London				construction.										
494208	West Gate, London	48/52	-	-	Day: Westgate shaft compound - shaft construction.	B	28	G5	T	H	-	-	-	-	
494242	West Gate, London	73/77	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	10	G5	T	H	-	-	D 14	-	CSV05-N04 CSV05-N05
495189	Ashbourne Parade, London	<40/45	-	-	Day: Westgate shaft compound - shaft construction.	B	13	G5	T	H	-	-	-	-	
498902	Priory Gardens, London	41/47	-	-	Day: Westgate shaft compound - shaft construction.	B	21	G5	T	H	-	-	-	-	
511662	Park View, London	42/53	<40/41	36/41	Day: Victoria Road crossover box compound - demolition and site preparation; Evening: Northolt (east) tunnels construction (Victoria Road crossover box main compound); and Night: Northolt (east) tunnels construction (Victoria Road crossover box main compound).	B	1	G4	T	H	-	-	-	-	
511662	Park View, London	42/53	-	-	Day: Victoria Road crossover box compound - demolition and site preparation.	B	1	G5	T	H	-	-	-	-	
700420	West Gate,	70/74	-	-	Day: Westgate shaft compound - shaft internal	B	1	G5	T	H	-	-	-	-	CSV05-

Assessment location		Impact criteria				Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	Significant effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	London				works - head house construction.										No1 *
700420	West Gate, London	70/74	-	-	Day: Westgate shaft compound - shaft internal works - head house construction.	B	1	G2	T	H	-	-	-	-	CSV05-No2

4.4 Assessment of significant effects

Residential receptors: direct effects – individual dwellings

4.4.1 Taking account of the avoidance and mitigation measures no residential buildings are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP. For daytime construction the trigger level is an equivalent continuous noise level of 75dB[2].

Residential receptors: direct effects – communities

4.4.2 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects[7] on the majority of receptors and communities. Residual temporary noise or vibration effects are identified later in this section.

4.4.3 The surface activities associated with construction of adit tunnels (comprising the operation of pumps and generator sets) will need to be undertaken during the evening and night-time for reasons of safety, engineering practicability or to reduce the impact on existing transport. Further information is provided in Section 2.3 of Volume 2 CFA report 05 for the Northolt Corridor and in the draft CoCP.

4.4.4 The assessment takes into consideration the time of day that noise will be generated: noise at night is assessed against a more stringent criterion than in the evening; and the evening against a more stringent criterion than during the day.

4.4.5 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.

4.4.6 In locations with lower existing sound levels[3], construction noise effects[1] are likely to be caused by changes to noise levels outside dwellings. These may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life. These effects are considered to be significant when assessed on a community basis taking account of the local context[3].

4.4.7 In this area, the direct construction noise effects on the acoustic character of the areas around the residential communities identified in Table 3 are considered to be significant.

[2] $L_{pAeq,0800-1800}$ measured outdoors at the building facade
[3] Further information is provided in Volume 5: Appendix SV-001-000.

Table 3: Likely significant construction noise and vibration effects on communities and associated facilities

Significant effect number	Type of significant effect	Time of day	Location	Cause (construction activities)	Assumed duration of impact and details
CSV05-C01	Noise (temporary increased annoyance)	Daytime	Approximately 10 dwellings on Carr Road, Northolt	Mandeville Road ventilation and intervention shaft (vent shaft) - shaft construction works and shaft internal works) with typical and highest monthly noise levels of 68dB and 71dB[2].	Nine months commencing 2019 and eight months commencing 2020
		Daytime	Approximately 15 dwellings on Carr Road and Badminton Close, Northolt	Mandeville Road vent shaft (shaft construction works and shaft internal works) with typical and highest monthly noise levels of 61dB and 65dB[2].	One month commencing 2019 and one month commencing 2020
		Daytime	Approximately 15 dwellings on Badminton Close, Northolt	Mandeville Road vent shaft (shaft construction works and shaft internal works) with typical and highest monthly noise levels of 62dB and 72dB[2].	One year commencing 2019 and eight months commencing 2020
CsV05-C02	Noise (temporary increased annoyance)	Daytime	Approximately 40 dwellings on Belvue Road, Northolt	Mandeville Road vent shaft (shaft construction works and shaft internal works) with typical and highest monthly noise levels of 68dB and 71dB[2].	Nine months commencing 2019 and eight months commencing 2020

Residential receptors: indirect effects

4.4.9 Significant noise effects on residential receptors arising from construction traffic are unlikely to occur in this area.

Non-residential receptors: direct effects

4.4.10 Significant construction noise effects have been identified on the following non-residential receptors:

- Westgate House, Westgate London W5 1UA (CSV05-N01). Significant noise effects[1] have been identified on a reasonable worst case basis during the daytime with noise levels projected to rise above 75dB[4]. This duration of the effect is approximately five months in 2019 during the construction of the Westgate vent shaft. The predicted noise levels for this building are taken from the nearest assessment location 700420, which reach 74dB[4]. However, Westgate house is located closer to the construction site than this assessment

[4] Equivalent continuous sound level, $L_{pAeq,\ 0800\text{-}1800}$.

location and it has been judged that the levels at this receptor will exceed those predicted at the nearest assessment location; and as a consequence a significant noise effect is likely.

- Westgate Media and Broadcast Ltd Westgate London W5 1UA (CSV05-N02). Significant noise effects have been identified on a reasonable worst case basis during the daytime with noise levels rising to 76dB[4]. The duration of the effect is approximately five months in 2019 during the construction of the Westgate vent shaft.
- AGB House Westgate, London W5 1EL (CSV05-N03). Significant noise effects have been identified on a reasonable worst case basis during the daytime with noise levels rising to 75 dB[4]. The duration of the effect is approximately five months in 2019 during the construction of the Westgate vent shaft.
- Commercial operations in Westworld Westgate, London W5 1EL (CSV05-N04). Significant noise effects have been identified on a reasonable worst case basis during the daytime with noise levels rising to 79dB[4]. The duration of the effect is approximately one year and three months in 2019 during the construction of the Westgate vent shaft.
- Manhattan House, Manhattan Business Park (CSV05-N05). Significant noise effects have been identified on a reasonable worst case basis during the daytime with noise levels rising to 79dB[4]. The duration of the effect is approximately one year and three months in 2019 during the construction of the Westgate vent shaft.
- Greenford Mail Centre (CSV05-N06). Significant noise effects have been identified during the daytime with noise levels rising to around 70dB during the construction of the Greenpark Way vent shaft; and
- ITV studios, Clausen House, Perivale Business Park (CSV05-N07). A significant effect has been identified due to ground-borne noise and vibration from the operation of TBMs. The effects would be short term (a matter of days).

4.4.11 A construction noise impact has been predicted at the London Northolt Travelodge, represented by assessment location 434826, reaching 65dB during the daytime period. The peak hours of occupation will be during the evening and night time periods during which no construction noise effect has been predicted. Therefore, no significant noise effect has been predicted at this location.

Non-residential receptors: indirect effects

4.4.12 Significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area.

Cumulative effects from the Proposed Scheme and other committed development

4.4.13 This assessment has considered the potential cumulative construction noise effects of the Proposed Scheme and other committed developments[5]. In this area, there is no development that will be likely to result in any significant cumulative construction noise and vibration effects.

[5] Refer to section 2 of Volume 2 CFA report 05 Northolt Corridor.